

4. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 1, the process further comprising,

adding an alkali to the solution to adjust pH from 4 to 12,

adding divalent and trivalent metal salts to said solution, and

precipitating the layered double hydroxide having the fluorine compound between layers and the polymer containing fluorine.

5. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 1,

wherein the divalent metal salt is a salt of magnesium, calcium, zinc, nickel, copper, manganese (divalent), or cobalt (divalent), and the trivalent metal salt is a salt of aluminum, iron, chromium, manganese (trivalent), cobalt (trivalent), potassium, lanthanum, or scandium.

6. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 1, wherein the divalent and the trivalent metal salts are chlorides.

7. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 1,

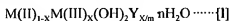
wherein said fluorine compound is [^]carboxylic acid or [^]sulfonic acid having the [^]fluorocarbon chain, in which the number of carbon is more than 5.

8. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 1,

wherein the polymer containing fluorine is poly-tetra-fluoro-ethylene.

9. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 1,

wherein the layered double hydroxide having the fluorine compound between layers is shown in the following formula [1] *col 13*



where Y is an anion having valence number m of the fluorine compound having the fluorocarbon chain, M(II) is a divalent metal ion, M(III) is a trivalent metal ion, X is 0.1 to 0.5, and n is 0 or positive integer.

10. (Amended) A treatment process for recovering the fluorine compound and its salts, the process comprising,

precipitating the layered double hydroxide and the polymer containing fluorine by the treatment process according to claim 1,

recovering the solid part by the solid-liquid separation,

dissolving said recovered solid part in a mineral acid to recover the separated fluorine compound or its salts, or

heating said mineral acid dissolving the recovered solid part,

putting quietly to separate an oil layer, and

taking out an oil layer to recover the fluorine compound and its salts.

11. (Amended) A treatment process for recovering the fluorine compound and its salts, the process comprising,

precipitating the layered double hydroxide and the polymer containing fluorine by the treatment process according to claim 1,

recovering the solid art by the solid-liquid separation,

contacting said separated solid part with a sodium carbonate aqueous solution,

recovering the solid part by the solid-liquid separation,

dispersing the recovered solid part to an organic solvent, and

filtering an insoluble solid part from said solvent.

Please add the following new claims:

12. (New) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 2, the process further comprising, adjusting pH of the solution to more than 4, precipitating the layered double hydroxide having the fluorine compound between layers and the polymer containing fluorine compound.

13. (New) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 2, the process further comprising, adding an alkali to the solution to adjust pH from 4 to 12, adding divalent and trivalent metal salts to said solution, and precipitating the layered double hydroxide having the fluorine compound between layers and the polymer containing fluorine.

14. (New) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 2, wherein the divalent metal salt is a salt of magnesium, calcium, zinc, nickel, copper, manganese (divalent), or cobalt (divalent), and the trivalent metal salt is a salt of aluminum, iron, chromium, manganese (trivalent), cobalt (trivalent), potassium, lanthanum, or scandium.

15. (New) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 2, wherein the divalent and the trivalent metal salts are chlorides.

16. (New) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 2,

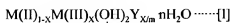
wherein said fluorine compound is ^acarboxylic acid or ^asulfonic acid having the ^afluorocarbon chain, in which the number of carbon is more than 5.

17. (New) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 2,

wherein the polymer containing fluorine is poly-tetra-fluoro-ethylene.

18. (New) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim 2,

wherein the layered double hydroxide having the fluorine compound between layers is shown in the following formula [I] ^{cd et al}



where Y is an anion having valence number m of the fluorine compound having the fluorocarbon chain, M(II) is a divalent metal ion, M(III) is a trivalent metal ion, X is 0.1 to 0.5, and n is 0 or positive integer.

19. (New) A treatment process for recovering the fluorine compound and its salts, the process comprising,

precipitating the layered double hydroxide and the polymer containing fluorine by the treatment process according to claim 2,

recovering the solid part by the solid-liquid separation,

dissolving said recovered solid part in a mineral acid to recover the separated fluorine compound or its salts, or

heating said mineral acid dissolving the recovered solid part,

putting quietly to separate an oil layer, and

taking out an oil layer to recover the fluorine compound and its salts.

20. (New) A treatment process for recovering the fluorine compound and its salts, the process comprising,

precipitating the layered double hydroxide and the polymer containing fluorine by the treatment process according to claim 2,

recovering the solid part by the solid-liquid separation,

contacting said separated solid part with a sodium carbonate aqueous solution,

recovering the solid part by the solid-liquid separation,

dispersing the recovered solid part to an organic solvent, and

filtering an insoluble solid part from said solvent.

220053US-0PCT

Marked-Up Copy
Serial No: _____
Amendment Filed on: <u>3-12-2002</u>

IN THE CLAIMS

--3. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim [1] or [2] 1, the process further comprising,

adjusting pH of the solution to more than 4,

precipitating the layered double hydroxide having the fluorine compound between layers and the polymer containing fluorine compound.

4. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim [1] or [2] 1, the process further comprising,

adding an alkali to the solution to adjust pH from 4 to 12,

adding divalent and trivalent metal salts to said solution, and

precipitating the layered double hydroxide having the fluorine compound between layers and the polymer containing fluorine.

5. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to [any one of claims [1] to [4]] claim 1.

wherein the divalent metal salt is a salt of magnesium, calcium, zinc, nickel, copper, manganese (divalent), or cobalt (divalent), and the trivalent metal salt is a salt of aluminum, iron, chromium, manganese (trivalent), cobalt (trivalent), potassium, lanthanum, or scandium.

6. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to [any one of claims [1] to [5]] claim 1, wherein the divalent and the trivalent metal salts are chlorides.

7. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to [any one of claims [1] to [6]] claim 1,

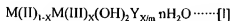
wherein said fluorine compound is carboxylic acid or sulfonic acid having the fluorocarbon chain, in which the number of carbon is more than 5.

8. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to [any one of claims [1] to [7]] claim 1,

wherein the polymer containing fluorine is poly-tetra-fluoro-ethylene.

9. (Amended) The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to [any one of claims [1] to [8]] claim 1,

wherein the layered double hydroxide having the fluorine compound between layers is shown in the following formula [1].



where Y is an anion having valence number m of the fluorine compound having the fluorocarbon chain, M(II) is a divalent metal ion, M(III) is a trivalent metal ion, X is 0.1 to 0.5, and n is 0 or positive integer.

10. (Amended) A treatment process for recovering the fluorine compound and its salts, the process comprising,

precipitating the layered double hydroxide and the polymer containing fluorine by the treatment process according to [any one of claims [1] to [9]] claim 1,

recovering the solid part by the solid-liquid separation,

dissolving said recovered solid part in a mineral acid to recover the separated fluorine compound or its salts, or

heating said mineral acid dissolving the recovered solid part,

putting quietly to separate an oil layer, and

taking out an oil layer to recover the fluorine compound and its salts.

11. (Amended) A treatment process for recovering the fluorine compound and its salts, the process comprising,

precipitating the layered double hydroxide and the polymer containing fluorine by the treatment process according to [any one of claims [1] to [9]] claim 1,

recovering the solid art by the solid-liquid separation,

contacting said separated solid part with a sodium carbonate aqueous solution,

recovering the solid part by the solid-liquid separation,

dispersing the recovered solid part to an organic solvent, and

filtering an insoluble solid part from said solvent.

Claims 12-20 (New).--

What is claimed is,

[1] A treatment process of a solution containing an organic compound having a fluorocarbon chain (hereinafter said to as the fluorine compound) and a polymer containing fluorine, the process comprising, adding divalent and trivalent metal salts to said solution, forming a layered double hydroxide having the fluorine compound between layers to fix the fluorine compound, and precipitating said layered double hydroxide with the polymer containing fluorine.

[2] A treatment process of a solution containing the fluorine compound and a polymer containing fluorine, the process comprising, adding divalent and trivalent metal salts to said solution, forming a layered double hydroxide having the fluorine compound between layers to fix the fluorine compound, precipitating said layered double hydroxide having the fluorine compound between layers and the polymer containing fluorine, recovering a solid part by a solid-liquid separation, dissolving said recovered solid part in an acid, and separating ^{the} a fluorine compound or its salt.

amended [3] The treatment process of the solution containing the fluorine compound and the polymer containing fluorine according to claim [1] or [2], the process further comprising, adjusting pH of the solution to more than 4, precipitating the layered double hydroxide having the fluorine compound between layers and the polymer containing fluorine compound.